Table 1. Expected range of values for soilless media parameters analyzed according to SME procedure (Warncke 2011)

Parameter	Range	Nutrient Balance [1]
pH	5.0–6.5	—
EC [2]	<300 mhos×10^{-5}/cm	—
EC	< 3 mS/cm	—
IN-N	40–200 ppm	—
NO_3-N	40–200 ppm	8–10%
NH_4-N	0–20 ppm	<3%
P	5–20 ppm	
K	30–300 ppm	11–13%
Ca	20–250 ppm	14–16%
Mg	15–150 ppm	4–6%
Na	—	<10%
Cl	—	<10%

[1] Nutrient balance =
[nutrient concentration (ppm) × 100] ÷ EC (ppm)

EC (ppm) = EC mhos × 10^{-5}/cm × 7.0
or
EC (ppm) = mS/cm × 700

[2] The NCDA&CS Agronomic Division measures EC in units of mhos×10^{-5}/cm.

Additional resources

Warncke D. 2011. Recommended test procedures for greenhouse growth media. In: Sims JT, Wolf A, editors. Recommended soil testing procedures for the northeastern United States. Newark (DE): Univ Del Agric Exp Station. Northeastern Regional Bulletin 493. p 103–10.

Whipker B. 1998. Submission procedures for root substrate, water, fertilizer solution and plant tissue samples. Raleigh (NC): NC State Univ Dept Hort Sci & NC Coop Ext Serv. Horticulture Information Leaflet 560.

North Carolina Department of Agriculture and Consumer Services

Steve Troxler, Commissioner of Agriculture

Agronomic Division
Colleen M. Hudak-Wise, Ph.D., Director

Plant/Waste/Solution/Media Section
Brenda Cleveland, Agronomist

www.ncagr.gov/agronomi/

(919) 733-2655

Mailing Address
1040 Mail Service Center
Raleigh NC 27699-1040

Physical Address [DHL, FedEx, UPS]
4300 Reedy Creek Road
Raleigh NC 27607-6465

For more information on sampling, interpreting agronomic reports or implementing recommendations, contact the regional agronomist assigned to your county.

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Agronomic Sampling
Folder No. 9

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Soilless Media Analysis: Sampling, Results & Rationale

Floriculture, Nursery & Greenhouse Crops

Soilless media are light-weight substrates used in containerized production of floriculture and nursery crops, greenhouse vegetable and tobacco transplants. Common components of soilless substrates include compost, peat moss, perlite, pine bark, sand and/or vermiculite.

Unlike mineral soils, soilless substrates tend to have little capacity to supply or retain nutrients or to buffer pH. Consequently, container nutrient levels and pH are dynamic. Regular monitoring of pH, electrical conductivity and nutrient levels makes it possible to fine-tune fertilization programs and keep them on track.

Saturated media extract (SME) procedure is used by the Agronomic Division for soilless media analysis. It is preferred over traditional soil testing for laboratory analysis of container substrates (Warncke 1998). The Division offers the SME procedure through its Plant, Waste, Solution and Media laboratory.

Methods and measures

SME measures electrical conductivity (EC), nitrate-nitrogen (NO_3-N), ammonium-nitrogen (NH_4-N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), sulfur (S), sodium (Na) and chloride (Cl^-). EC units are mhos×10^{-5}/cm, and nutrient concentration units are parts per million (ppm). pH is measured on a 1:1 sample-to-water (by volume) slurry.